

~~for old or new~~ Wednesday Oct 15th 1879.

Up early and Jerry prepared to leave for Kanab to carry in a pack of fossils, letters, and to bring mail in return. The morning was additional cold. cloudy & hazy. A late fall day. Cleared up a little and grew warmer towards night.

I went five or six miles south and measured a portion of the sandstone of the upper division of the Carboniferous. Yesterday took the measurement of the upper part by Socke level and barometer. each gave 775 feet. To day added 615 feet more. These measurements are much greater than those obtained by Mr Gilbert so I took unusual pains to have them correct.

Retired and prepared my supper & then, caught a few Branchiopods,

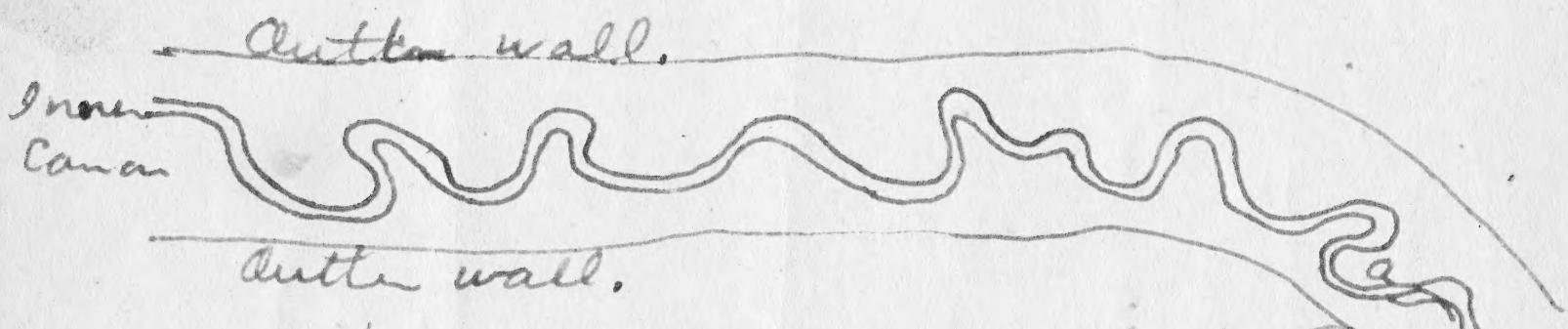
after eat'g it. This is the first
time I ever saw these beautiful
little crustaceans alive. At sunset
the eastern cliff was very beautiful
as the dark red base and gray
~~grass~~^{or} grass above ^{or} capped by a golden
crayon, as the sunlight just touched
the summit. The afterglow was
also fine after the sun had set.

Very tired. Wrote a little &
~~walked in. Alone in my tent.~~
16th. Awoke at daybreak and heard
a loud report, a rumble and then the
rolling of rocks down the canon. A portion
of the cliff had broken off. ~~The sunrise~~
~~salute.~~ Went up the east side 1600 feet
& measured the sandstone & limestone,
also secured a fine lot of fossil shaggs
for the clay modules. Retired and
prepared for the night. Just after
dark Jerry came bringing 14 letters
and a great pile of papers. True
week's mail. How pleasant it was

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to read those from home. To learn
of the welfare of loved ones and
the general life of all my home
friends. Sig. G. Cappellini of Bologna
Italy writes acknowledging the receipt
of my Utreca slate paper & invites me to
meet him at Bologna 1881. at the Inter-
national Congress of Geologists. Prof.
Geinitz of Dresden also acknowledges
receipt of U.S. paper, but as it is
written in German I cannot read it.
One of the beauties of an imperfect
education. Left papers for future
reading. after breakfast very morn-
ing packed and started down the
canon. Crossed the Marsie sand-
stone at Leining camp and for
several miles the canon gradually
deepened until we were in a canon
within a canon. The outer walls
retreating back leaving the cut in
the sandstone. Man to the air
caught a glimpse of the white:

limestone 2000 feet above and
back from the river canon. The
inner canon comes and winds
down thro' the sandstone and then
into the sandstone beneath.



At (a) the inner wall is 1000 feet ^(b)
the outer 1700 at (b). Camped
at night beside a water pocket.
a hole in the bed of the stream the
canon is very narrow. Not over three
rods broad & the solid limestone,
stained red, rises 1000 feet to the
sink. The high walls back cannot
be seen. The change from the sand-
stone with its canions and beauti-
ful sculpture and picturesqueness
coming to the massive perpendicular
limestone wall is very striking. It
seems a lonely and long journey down
this canon, but mother places her
treasures and rare beauties where

energy and work is necessary to obtain or see them. Thus far my trip has well repaid the labor by the simple seeing the beautiful and grand features of the natural scenery, not to mention the knowledge gained by a study of the geological structures. Twilight is falling & it is short in this region so will postpone to next ~~as~~ the tent will not be put up to night, will read by the firelight and turn in early.

Oct 1st. Last night I lay awake a long time looking up at the stars the canon walls framed an oval frame to a beautiful blue sky. The north star forming the center of the northern end and towards midnight Jupiter the eastern of the southern extremity. The quiet broken only by the stirring of our animals. The gloom of the great canon and above all the blue sky and bright stars above gave an impression

of the solemnity of nature in the
hours when she is at rest that will
not soon be effaced.

Up at daybreak, breakfasted, collected
a few fossils and then bid adieu
to our camp. All were glad to leave
it. a puddle to drink from and no
feed for the animals. The caravan con-
tinued to wind first east then west
and in fact to all points of the compass.
The trail was good and a few miles
down a little clear water was seen in
the bed of the channel and soon a small
brooklet glided over the rocks. Springs added
to its volume and to night the music
of a noisy brook broke the stillness.

On our way down the cañon a drove of
cattle was ahead of us. At one point
they stopped & refused to be driven ahead.
We let them pass by and found
a rocky barrier in our path. By an
hours work a path was formed and
we passed over only to find a still
greater mass of fallen rocks with

a deep pool of water between two high
blocks of limestone. Off with the pack &
saddles drive the animals in for a
swim. Carry the luggage over the rocks
repack & then find the trail obstructed
again. A log 20 feet long is hauled by
ropes up the side of a slanting rock
fastened there and stairs & ditch them
against it to form a path. The
white mule rebels, lies down, rolls
half over. Unpack pull him up,
beat well for future admonition
to repeat the copir, shrink his own
carry the pack & start down the
canon. The sun is getting low so a
level shelter sand beach is selected and
the tent put up. a hearty supper
& soon the cares of the day are forgotten
in reading & writing. The grass is
high along the stream & all are
content once more.

One object not mentioned is worthy of N.

Soon after reaching the running water
a mass of green was seen ahead attached
to the side of the cliff. Approaching, it
was seen to be a great cluster of a plant
attached to the cliff when a spring
came out. Jutting out from the
cliff twenty feet and so high a horse
could pass under. It's leaves were
small & of a deep olive green, scattered
thickly over the entire mass and star
shaped, brilliant scarlet flowers. Through
the mass the water penetrated and
rained down as from a great sponge.
It was quite a refreshing sight
as nothing of the character has
been seen in many a long day.

Tomorrow is Sunday & I hope it will
be a day of rest for man & beast as
all need it. A ~~huge~~ ^{enormous} mass of lime-
stone has fallen from the cliff a short
distance below & a trail must be built
over or around it. 50 miles from the
nearest house we lie down to sleep
grubby and without fun.

the same Father ^{of} watches over us here
that does at from home and life is
secure by care and foresight as given
to its protection.

Sunday P.M. 19th Oct.

After breakfast climbed up the cliff
a hundred feet to a damp spot &
found a great cluster of ferns and
wild plants. The fern resembles
one we saw beautiful maidenhair
and altho' not as delicate and
graceful may be a variety of it or
another species of the same genus.

Adiantum. Clipped climbing down
& fell whereby getting a black
thornail & a sore thumb. Read
papers until noon. ate a lunch and
went down the canon to examine the
canon & trail. We can pass the
fallen limestone by going over a
very rough & steep mass of rock and
dirt. a bad looking road. Blocks
of limestone $40 \times 50 \times 30$, 160000 cubic
feet are piled where the trail formerly
led. The mass has fallen recently

as the dust has not washed off
the rocks. What a sight it would
have been to have seen this
great mass, 1000 feet high tumble
over & plunge into the canon
beneath filling it to a depth of
100 feet. Luckily it was in a broad
portion of the canon or our path
would have been permanently
obstructed. The cliff looks as tho'
it had lost a chip off its red
surface leaving a long white
scar. Small waves fall per-
-quently as we have seen them
possibly broken lying in the bed
of the canon. I trust they will
hold up until we return the
big canon and by then I
do not care to be blocked in here
or crushed. To die here would
be unfortunate, not so much to me
as to those left behind. I prefer
to meet that fiend a far as the
case may be among them than
have a care for my comfort and

In one of that left night the
soil had been the soil of
land we passing the timber of
the one to that which he left
out of the life now gone.

At 200. Ten hours of hard work
& three miles gained. We built
the trail over the fallen mass
of rocks and a rough one it was
but by putt'g a portion of the
packs on Jane & Charlie we pulled
tho. Another slight winding of
the trail to a camp at the mouth
of a canon entering from the
east. A hard day for man
and beast but soon to be forgotten
if we reach the Colorado to-
morrow. The rock is becoming
more shaly and little benches
form along the lower portion of the
canon walls. It is warm & pleasant
in the tent will not be cracked
tonight. We have added a lot

of bread cooked brownly and
biscuit beef & I guess we even
eat a good square meal as a mile
of dry bread & beef has answered
since breakfast at sunup.

Oct 21st 1879.

Left camp early and reached
the Colorado at noon. No without
some rough road however as at
one place it was swim or stop
for the animals. But we are
here at last & I feel repaid
for the labor altho' I am about
used up tonight. Headached
at noon but that has passed
off. My right thumb nail is
coming off result of a horse tie
troubleman a blow on the left
thumb with my stone hammer
consequent upon the right
being out of order, has healed
the end of that and in a

(15) No 23

The sun has set and though it is falling. A great deal of dust is and a large slice of vision beach ought to suffice as to what is in the country I am going. The vision house is grand and to the right and left the Cornish walls rise in a clean cliff over 2000 feet. In front, down the river a great mass of brick wall rises like an immense cattle pile falling to one thousand feet above to the right of the gray cap. To the right it is a great black mass yet small as compared with the greater extent of a very tall mound. By the light of the moon

for my seat is remarkable.
Canyon is all floor and sides
& towering above it stands
the rim. A place growing and
nesting in the dark red rock
beneath. Roofed by headland
from deep shadowe and
the bottoms supporting
the main mass. This is a
thousand feet height and twice
as thick as long. How small
it looks two miles away it is
a half a mile above the river.
The canyon is far in
expressive to me now than
at a first acquaintance. It
is at first sighted on shore
many changing features as
it is seen from different
parts of the river.

11.

day give me opportunity
to study & reflect. The
river is now low & the
water is a pinkish
the contained sediment washed
by recent rains away of
the country. Drinking from
yesterday, the taste of
clay was evident, & I
made a clear, running
brook coming down the hill.
Far far we see. Twilight
has faded into night and moon
I am in our tent writing by the
"gum" or the "bottom dip" often
called. My thoughts are crowding,
and from present appearance
I shall finish my work long
sooner than I anticipated and
dig out on up the canon. If
possible I will go on to

at upper Kanab to review the
biogeographical and done there
at math. If I can find a
place up near the great natural
bridge that will permit of my
climbing to the top of the inner
wall, I hope, I shall save a much
otherwise, do cork and web
plank incident will occur.

I wish to write to Cd to night
so will let this scribble answer
for to day's addition to my notes
on water & water forms.

(One note to fill this out) The
peculiar softness of the atmosphere tends
to smooth and soft the sharp
edges and rugged outline so that
a picture the rock seems
greatly impeded by this factor.
It is like a cliff of sand
without a棱角 of power.

⑩ Oct 27.

Rode up the Kanab canon. Nothing of special incident occurred. Found that a part of Mr. Gilbert's limestone series is sandstone.



A ten minute sketch I made of my old ruined sketch.

It may be that I can get a photograph of it if I go back to the photograph was

do so if possible.

I am now gaining in energy & spirit and if nothing more even occurs shall hope to push along so as to gain strength myself and keep the work in good control. One reason of depression or aversion here was coming from a high cold, almost like the sun here & warmer weather. Our food is now excellent. Beef, bread, rice, dried fruit hold out in good order. We eat a loaf of bread per day weighing $\frac{1}{2}$ to 3 pounds & a tray of old "tuck" as heavy collects. My meals are immense. Do not drink tea or coffee & have no desire for milk, butter or eggs. Paul Valley cooked us 3 hours chicken for 3 boys at least, and a like quantity of beans. We have now no meat in the

11
The sun has just gone down
behind my old ruin and a half
hour remains one darkness will
drive me in.

I may call supper. O.K.!
Rich beef tea, rice, peaches. Bread
To match a wine.

To day has been a busy one. Up
the Colorado Canon a mile or
two rocks to examine strata. Return
to dinner & then up the Randolph
Canon to search away until 3:30
P.M. to obtain a few rare fossils.
Return to camp, put fence in
mess gathered on the way and
then up for a wash traps.
Scout, found sand and washed
of stockings, towel etc. Then
put it, some of which on boat
& back up generally. And all
going well this time do not

feel at all unwell. Tomorrow
is Sunday but we shall have
to go up the canon a few miles.
The sooner we get above the bad
places the better. The barometer is
falling. Jerry's observation speaks
and to get caught down here
with high water above means
trouble. It may not rain in time
in four days but by that time
I hope to be above desolation
camp as we called it. I shall
not be sorry to turn homesteader.
This is a grand canon and
much there is that is beautiful
about it. Still I have seen it &
I think under favorable con-
ditions it am ready to leave
it. "Farewell forever! farewell forever!
In the wild Colorado with its
rapids & its rocks, it will trouble
us no more!"

(23)

Last night, the light of the moon
awoke me about 3 o'clock. I got up &
went outside the tent, as I thought the
same mist be fine. I was not
mistaken. The weird effect of
the moonlight was to heighten the
glow of the great canyon and at
the same time to give its north
walls a picturesqueness & beauty that
no other light could give. The
shadows were deep and the silvery
angle bathed in the soft silvery
light made each separate cliff
a study by itself. The walls
appeared twice as high as by
daylight and almost seemed
to touch the stars on the eastern
side. It was a sight that
only an artist could picture
out before you. My feeble
words cannot half express what
little I could see.

Down at the foot of the west

black cliff the sun went rushing
running along I could not help
thinking of Santa's Inferno where
fire has represented the dark
nest of our day. Soon this
will be all stored in memory's
valley and my trip to the Colosseum
a day of the past. There will
be placed side by side with
that descent to a few other places
I treasure & think of when that
is left free to wander back
to the beautiful and storied
objects that have crossed my
little wandering in this world
so small as it is I fear I shall
never compass its mysteries as hidden
in the lower rocks. All to that I
would like to give my energy you
have to come. May health &
it will be well with you.

3^o day Oct 26th 1879.

We were up & eating breakfast at
sunrise & soon after were packing
up. All went smoothly until our
Billy, a poor old madd' up pack
horse, made a misstep going along
a narrow part of the trail. He
failed to recover & after tumbling
a complete summons to land
down in a pool of water three
feet deep and lay there help-
less. By rolling him over he
gained his feet and we soon
had him out. Decided to comb
a mile above and when we
repacked Billy had a mind
was it was. First and over
my voice. Post me had such
a terrible time. I thought

however worked. Lucking the
opposite pack sick with -
noodled & am floundering
out of both occupied.

A very dry & all day or
more as far as can be

seen outside of the shower
clouds may drift down
without cut & laid out
and my bed is in order. A
large flat rock serves for
a candlestick and table of
all is comfortable. It is
still warm, last night I
had only kept one blanket
of which over me.

The sun is dimly about
a foot in the corner
where I am at. After
the flooded jetty
crossed the lake - free

(27) Oct 29th 1879.

Nothing of special incident has occurred the past three days. We have made another camp below desolation camp & I have collected a lot of fine fossils and also added to the measured section. Have taken several hand chisels up the canon walls but cannot get to the top yet. Tomorrow I propose searching for fossils & next day moving out & up above all the bad places. On our way up here we passed the hole where Old Billy set me in the water. To night I unite lying on my side, head bolstered w/
a coil on the knob of the neck is under full heading.

and is very painful. Hinders
me about my work. Last
Spring I had them because
I was over done. That cannot
be the reason now. Jerry
has just had a large one
on this neck. He is well
and strong. I wish it had
kept away a week longer.
It is severe work to climb and
+ pound with a hammer
when every blow + movement
hurts. Still it is nothing but
a job's comforter and can
be endured for a few days.
Jerry is getting homesick to get
out of this canon. He says he
wishes to get where he can
see something + see outside
of these rocky walls. I
cannot blame him very
much as it is not a cheerful
place or a snug place. Good night

(29)

Oct 31st 1877

Farewell October. To me you
have been an eventful month
in many ways and to night I
bid you good bye willingly, still
not without a sense of regret
as your bright beautiful days
have appealed to the higher
esthetic sense and more prac-
tically have enabled me to work
with energy & comfortable surround-
ings. I bid bid you farewell.

At 8 a.m. we left camp. Jane
carried the heavy pack & the other
three animals the remainder of
our worldly goods. Slowly and
sure we wound in & out up to
down, around great boulders, tho'
the water and after twice un-
packing & once makin' a swim
we reach our first camp
at the natural sponge (mentioned
when going down) above all the
bad places and near the trail
altho rough in places with

permit us to remain in the saddle until Kanob is reached. Four weeks yesterday since we left. as provisions are running low we shall probably go in by the 7th or 8th of November.

The weather is warm & comfortable. The brook & the hanging spring make music that is pleasant to the ear & on this little grass plot our camp fire burns & the tent, a little home, is bright & pleasant. I am getting quite accustomed to the manner of living and to day am more willing to remain out another month than since starting.

My boil has reached its maximum development & is now in the decline.

34

I have not
the place of old
I worked all day Sunday and
will rest another day. Our
provisions are nearly out & after
to day will live on bread & a
slice of bacon today until we reach
home. Under the circumstances
working on Friday was necessary
if the work was done at all.
There remained one hard, dan-
gerous climb to measure a section
of limestone that hitherto had
been passed over as it was nearly
inaccessible. Jerry accompanied me
& we chose a cliff about two miles
above camp as looking the most
favorable. At the start there was
a bad place but the setting
for 200 feet up. The stone
commenced here on a river
bank of the cliff gave a little slide
of sand & gravel which
will cling to our feet.

an inch or two, up the face of the cliff we went for over 200 feet & near the top found a spot where the rock was broken. The only spot we could get up. It was hard to back out so I managed to get my hands up over & getting a hold swim out & pulled up over. A slip there would have sent me 400 feet as our path had taken us out on the steep face of the cliff below. I then helped Jerry & we were soon at the top. By a line measured the section & then decided that we would rather walk ten miles up the canon rather than attempt the descent by the path we came up. Decided upon we started off on rocks & rough ground as our path lay at the foot of the outer range of cliffs 2000 feet high. Two miles up we were

stopped by a side canon. That we started to go up & around. At one place its walls were broken & we started down & struck an old Indian trail. After a rough climb we landed at the bottom of the canon only to find our way stopped by a fall of 30 feet over a ledge in a very narrow place. Up the side & along narrow ledges 150 feet above the bottom & then down a place not any too safe & the base was reached again. Three miles scramble over the boulders & our animals were reached. Never horse of hard work was over.

Evening.

To day have felt rather used up but did the work laid out & feel well to night. Tomorrow we start out for Kanab Mill

probably spend three days on
the way. We leave an unusually
pleasant camp to go north & over
2000 feet or more where it will
be cold & wintry. It is beau-
tiful October weather here.

Just at sunset I took a bath
beneath the great sponge, as
we call it, letting the water
stream over me. (I will tell
you more of this sponge on my
return.) This will probably
close my long letter to you as
on the march there will be
no time to write & the tent is
not put up at night.

Please keep this as I may
wish to read it some time.

I shall register it as it has been
too much trouble to write it to
have it lost.

Your affec son

A.B. № 6 -

" 5 bottom to h. 6. X

" 8 - 9. X

" 12 X

" 13. ^{1/4} Begin under left 20 on h. 12 X

" 15 X

" 16. - 18 - X

" 19 - 20 - sheet for Sherman - X.

" 21. Base of Tris? X

" ~~22 - 23.~~ 22 - 37. X

" 40 ^{1/4} Note on wood etc X

" 43 X

" 44 - 47 X

" 48 - 51 X